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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2002-NE-19-AD; Amendment 39-13693; AD 2004-13-11]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc RB211 Trent 875-17, Trent 877-17, Trent 884-17, Trent 884B-17, Trent 892-17, Trent 892B-17, and Trent 895-17 Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for Rolls-Royce plc (RR) RB211 Trent 875-17, Trent 877-17, Trent 884-17, Trent 892-17, Trent 892B-17, and Trent 895-17 series turbofan engines that have not incorporated RR Service Bulletin (SB) No. RB.211-72-D495, dated February 7, 2003. This AD requires initial and repetitive visual inspections or ultrasonic inspections of the intermediate pressure (IP) compressor rear stubshaft and IP turbine shaft for load-bearing spline flank wear, and replacement of these shafts if necessary. This AD results from reports of load-bearing spline flank wear of the IP compressor rear stubshaft and IP turbine shaft, revealed at inspection during overhaul. We are issuing this AD to prevent the loss of drive between the IP turbine and the IP compressor, which could result in a turbine rotor overspeed condition, possible uncontained engine failure, and damage to the airplane.

DATES: This AD becomes effective July 30, 2004.

ADDRESSES: You can get the service information identified in this AD from Rolls-Royce plc, P.O. Box 31 Derby, DE24 8BJ, United Kingdom; telephone 011-44-1332-242424; fax 011-44-1332-249936.

You may examine the AD docket at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

FOR FURTHER INFORMATION CONTACT: Christopher Spinney, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299, telephone (781) 238-7175; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed airworthiness directive (AD). The proposed AD applies to RR RB211 Trent 875-17, Trent 877-17, Trent 884-17, Trent 892-17, Trent 892B-17, and Trent 895-17 series turbofan engines. We

published the proposed AD in the Federal Register on January 27, 2003 (68 FR 3836). That action proposed to require initial and repetitive visual inspections for load-bearing spline flank wear of the IP compressor rear stubshaft and IP turbine shaft, and replacement of these shafts if necessary.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Request To Use an Alternate Ultrasonic Inspection

Three commenters request that we incorporate the intent of the latest issue of RR Mandatory Service Bulletin (MSB) No. RB.211-72-D339, Revision 1, dated March 28, 2003. The commenters ask that they be allowed to use an alternate ultrasonic inspection of the IP compressor-IP turbine shaft spline wear with a reduced repeat inspection time interval, introduced by the revised MSB.

We agree. We have reviewed the latest revision of RR MSB No. RB.211-72-D339, Revision 2, dated June 20, 2003, with RR and the Civil Aviation Authority (CAA), which is the airworthiness authority for the United Kingdom (U.K.), and we have approved the alternate ultrasonic inspection in this AD. Also, because that MSB adds the Trent 884B-17 engine to the applicability, we have added that engine to this AD applicability. We have concluded that since the proposal already applies to the Trent 884-17, adding the Trent 884B-17 engine would not require us to issue a supplemental notice of proposed rulemaking. Currently, there are no Trent 884B-17 engines installed on airplanes of U.S. registry.

Request To Change Compliance Intervals to Cycles Accumulated on Component

One commenter requests that we change compliance intervals from cycles accumulated on the engine, to cycles accumulated on the component. The commenter states that components are sometimes switched between engines, making cycle counting difficult.

We agree. Cycle counting on the component is a more precise way to set the inspection intervals and is introduced in this proposal. Also, this AD corrects an error in the NPRM where the initial inspection interval was 4,500 cycles from the effective date of the AD, and should have been 4,500 cycles-since-new (CSN).

Initial Inspection Drawdown Added

We have added an initial inspection drawdown of 100 cycles for engines that have not had an initial inspection, but are over the initial inspection threshold. We are not aware of any engines over the initial threshold and that have not had the initial inspection.

Clarification of Engine Applicability

We have clarified the wording in the engine applicability, to state that the AD applies to engines that have not incorporated RR SB No. RB.211-72-D495, dated February 7, 2003. That SB incorporates a modification for positive lubrication of the IP compressor rear stubshaft and IP turbine shaft.

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these changes will neither increase the economic burden on any operator

nor increase the scope of the AD. The assigned paragraph letters in the regulatory section have been changed from what appeared in the proposal, as we are continuing our introduction of plain language into our documents.

Costs of Compliance

There are about 350 RR RB211 Trent 875-17, Trent 877-17, Trent 884-17, Trent 892-17, Trent 892B-17, and Trent 895-17 series turbofan engines of the affected design in the worldwide fleet. We estimate that 90 engines installed on airplanes of U.S. registry would be affected by this AD. We also estimate that it would take about 0.5 work hours per engine to perform the proposed inspections, and that the average labor rate is $65 per work hour. Based on these figures, we estimate the total cost to U.S. operators for performing one inspection to be $2,925.

Regulatory Findings

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866;

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "AD Docket No. 2002-NE-19-AD" in your request.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 as follows:

PART 39–AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "www.faa.gov"

2004-13-11 Rolls-Royce plc: Amendment 39-13693. Docket No. 2002-NE-19-AD.

Effective Date

(a) This AD becomes effective July 30, 2004.

Affected ADs

(b) None.

Applicability

(c) This AD applies to Rolls-Royce plc (RR) RB211 Trent 875-17, Trent 877-17, Trent 884-17, Trent 892-17, Trent 892B-17, and Trent 895-17 series turbofan engines that have not incorporated RR SB No. RB.211-72-D495, dated February 7, 2003. These engines are installed on, but not limited to, Boeing 777 series airplanes.

Unsafe Condition

(d) This AD results from reports of load-bearing spline flank wear of intermediate pressure (IP) compressor rear stubshaft and intermediate pressure (IP) turbine shaft, revealed at inspection during overhaul. We are issuing this AD to prevent the loss of drive between the IP turbine and the IP compressor, which could result in a turbine rotor overspeed condition, possible uncontained engine failure, and damage to the airplane.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

Initial Visual Inspection of the IP Turbine Shaft and IP Compressor Stubshaft

(f) At the next accessibility of the IP turbine shaft, not to exceed the later of 4,500 cycles-since-new (CSN) or 100 cycles after the effective date of this AD on the IP turbine shaft, do the following:

(1) Inspect the IP turbine shaft splines for wear. Information on inspecting IP turbine shaft splines can be found in RR Mandatory Service Bulletin (MSB) No. RB.211-72-D339, Revision 2, dated June 20, 2003.

(2) If the IP turbine shaft spline wear measured in paragraph (f)(1) of this AD is greater than 0.005 inch, remove the IP turbine shaft from service.

(3) If the IP turbine shaft spline wear measured in paragraph (f)(1) of this AD is greater than 0.001 inch, inspect IP compressor stubshaft splines for wear. Information on inspecting IP compressor stubshaft splines can be found in RR MSB No. RB.211-72-D339, Revision 2, dated June 20, 2003.

(4) If the IP compressor stubshaft spline wear measured in paragraph (f)(3) of this AD is greater than 0.005 inch, remove the IP compressor stubshaft from service.

(5) For the purposes of this AD, accessibility of the IP turbine shaft is defined as removal of the IP turbine module from the engine.

Repetitive Visual Inspections of the IP Turbine Shaft and IP Compressor Stubshaft

(g) Perform repetitive visual inspections of the IP turbine shaft and IP compressor stubshaft using the procedures specified in paragraph (f)(1) through (f)(4) of this AD, at each accessibility, not to exceed the applicable repetitive inspection intervals in the following Table 1:

TABLE 1.—REPETITIVE VISUAL INSPECTION INTERVALS

Results of last inspection	Reinspection interval
(1) If wear was less than 0.001 inch on IPT shaft splines and IPC stubshaft splines.	Reinspect within 4,500 cycles-since-last visual inspection (CSLI) of the IPT shaft splines.
(2) If wear was 0.001 inch or greater on IPT shaft splines or on the IPC stubshaft splines.	Reinspect within 2,000 CSLI of the IPT shaft splines or IPC stubshaft, whichever occurs first.
(3) If an ultrasonic measurement of wear was less than 0.013 inch	Reinspect within 3,000 cycles since last ultrasonic inspection.

Optional Initial Ultrasonic Inspection of the IPT Shaft and IPC Stubshaft

(h) As an option to the initial visual inspection specified in paragraph (f) of this AD, do the following:

(1) At the later of 4,400 CSN or 100 cycles after the effective date of this AD on the IPT shaft, ultrasonically inspect the IP compressor stubshaft. Information on the ultrasonic inspection can be found in RR MSB No. RB.211-72-D339, Revision 2, dated June 20, 2003.

(2) If wear is greater than 0.013 inch, remove engine from service within an additional 100 cycles-in-service.

Optional Repetitive Ultrasonic Inspections of the IP Turbine Shaft and IP Compressor Stubshaft

(i) As an option to the repetitive visual inspections specified in paragraph (g) of this AD, do the following:

(1) Ultrasonically inspect the IP compressor stubshaft, using the repetitive inspection intervals in Table 2 of this AD. Information on the ultrasonic inspection can be found in RR MSB No. RB.211-72-D339, Revision 2, dated June 20, 2003.

TABLE 2.—REPETITIVE ULTRASONIC INSPECTION INTERVALS

Results of last inspection	Reinspection interval
(i) If visually inspected wear was less than 0.001 inch on IPT shaft splines and IPC stubshaft splines.	Reinspect within 4,400 cycles-since-last visual inspection (CSLVI) of the IPT shaft splines.
(ii) If visually inspected wear was 0.001 inch or greater on IPT shaft splines or on the IPC stubshaft splines.	Reinspect within 2,000 CSLVI of the IPT shaft splines or IPC stubshaft, whichever occurs first.
(iii) If ultrasonically inspected wear was less than 0.013 inch	Reinspect within 3,000 since last ultrasonic inspection.

(2) If wear is greater than 0.013 inch, remove engine from service within an additional 100 cycles-in-service.

Alternative Methods of Compliance

(j) The Manager, Engine Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

Material Incorporated by Reference

(k) None.

Related Information

(l) Rolls-Royce plc MSB No. RB.211-72-D339, Revision 2, dated June 20, 2003, pertains to the subject of this AD.

Issued in Burlington, Massachusetts, on June 18, 2004.
Francis A. Favara,
Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.
[FR Doc. 04-14317 Filed 6-24-04; 8:45 am]
BILLING CODE 4910-13-P